Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

Claims 1-19 cancelled

20.   (New) A method for designing a synchronous digital system comprising:

accepting specifications of a plurality of data elements whose values define a state of the
     synchronous digital system and specifications of a plurality of state transition
     rules, wherein application of at least some of the state transition rules updates
     values of the data elements according to the specification of said state transition
     rule; and

computing a specification of the synchronous digital system such that at least some state
     transitions of the synchronous digital system each corresponds to application of a
     group of two or more of the state transition rules, wherein at least some of the
     groups of state transition rules each includes rules that potentially conflict in their
     access to the data elements.

21.   (New) The method of claim 20 wherein computing the specification of the
synchronous digital system includes identifying the rules that potentially conflict in their access
to the data elements.

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22.   (New) The method of claim 20 wherein computing the specification of the synchronous digital system includes determining for a group of rules that are all enabled in a first state of the synchronous digital system whether a second rule of the group of rules remains enabled in a second state resulting from application of a first rule of the group of rules in the first state.

23.   (New) The method of claim 20 wherein computing the specification of the synchronous digital system includes, for each of the at least some of the groups of state transition rules, identifying a sequence of rules such that application of said sequence of rules corresponds to a single transition of the synchronous system.

24.   (New) The method of claim 23 wherein identifying the sequence of the rules includes determining whether rules in the sequence remained enabled after application of a prior enabled rule in the sequence.

25.   (New) Software stored on a computer-readable medium for designing a synchronous digital system comprising instructions for causing a computer system to:

accept specifications of a plurality of data elements whose values define a state of the synchronous digital system and specifications of a plurality of state transition rules, wherein application of at least some of the state transition rules updates values of the data elements according to the specification of said state transition rule; and

compute a specification of the synchronous digital system such that at least some state transitions of the synchronous digital system each corresponds to application of a group of two or more of the state transition rules, wherein at least some of the groups of state transition rules each includes rules that potentially conflict in their access to the data elements.

26.   (New) A system for designing a synchronous digital system comprising:

means for accepting specifications of a plurality of data elements whose values define a
        state of the synchronous digital system and specifications of a plurality of state
        transition rules, wherein application of at least some of the state transition rules
        updates values of the data elements according to the specification of said state
        transition rule; and

means for computing a specification of the synchronous digital system such that at least
        some state transitions of the synchronous digital system each corresponds to
        application of a group of two or more of the state transition rules, wherein at least
        some of the groups of state transition rules each includes rules that potentially
        conflict in their access to the data elements.